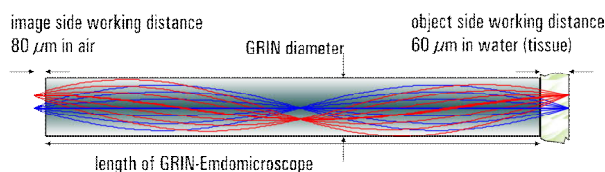


GRIN Needle Endomicroscopes for Fluorescence Microscopy

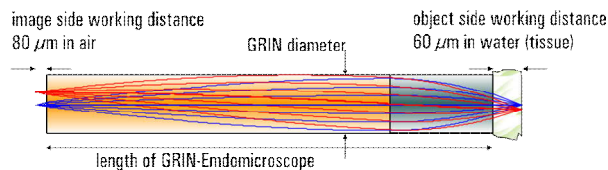
GRIN Needle Endomicroscopes are used for deep tissue imaging. They relay the micron-scale resolved image of the tissue over a longer length to a plane outside of the tissue at the other end of the needlescope. They are used with epi-fluorescence imaging (Design Wavelength 520 nm). The Endomicroscopes are fabricated as GRIN-singlets with NA = 0.50 on both sides or as GRIN-doublets with an object NA of 0.5 and an image NA of 0.19. Working distances on object side are specified in water or tissue, on image side in air. They are offered in different lengths resulting from adding 0.5 GRIN-pitches (periods) to the GRIN. Optional, they can be offered as side viewing needlescope by adding a 90° prism on object side.

Singlets:



- object side working distance in water: 60 μm
- image side working distance in air: 0 μm / 80 μm
- design wavelength: 520 nm
- NA Object / image side: 0.50 / 0.50
- Magnification: 1:1 / 1:-1 (depending on pitch length)

Doublets:

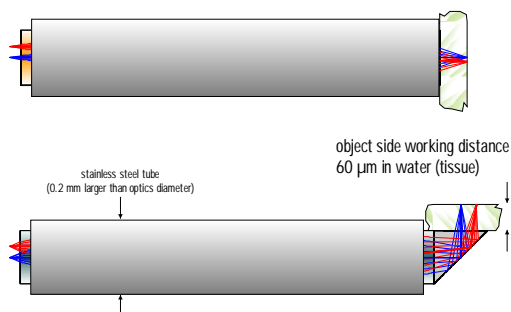


- object side working distance in water: 60 μm
- image side working distance in air: 80 μm
- design wavelength: 520 nm
- NA Object / image side: 0.50 / 0.19
- Magnification: 1:2.6 / 1:-2.6 (depending on pitch length)

Available lengths:

Diameter (mm)	Product Code	Image side working distance (μm)	Length (mm)
0.50	NEM-050-06-00-520-S-0.5p	0	2.22
	NEM-050-06-08-520-S-0.5p	80	2.08
	NEM-050-06-08-520-S-1.0p	80	4.38
	NEM-050-06-08-520-S-1.5p	80	6.67
	NEM-050-06-08-520-S-2.0p	80	8.96
1.00	NEM-100-06-00-520-S-0.5p	0	4.67
	NEM-100-06-08-520-S-0.5p	80	4.54
	NEM-100-06-08-520-S-1.0p	80	9.28
	NEM-100-06-08-520-S-1.5p	80	14.02

- Other diameters (0.35 mm, 0.60 mm, 0.85 mm, 1.80 mm or 2.00 mm), other working distances or other design wavelength are available on request



Available lengths:

Diameter (mm)	Product Code	Length (mm)
0.50	NEM-050-06-08-520-DS	3.98
	NEM-050-06-08-520-DM	10.08
	NEM-050-06-08-520-DL	16.19
1.00	NEM-100-06-08-520-DS	8.28
	NEM-100-06-08-520-DM	20.50

- Other diameters (0.35 mm, 1.8 mm), other working distances or other design wavelength are available on request

Notes:

- Diameters are sole GRIN-optics diameters
- Optionally the Endomicroscopes can be delivered in medical-grade stainless steel tubes (1.4301), with outer diameters of 0.70 mm for 0.5 mm optics and 1.2 mm for 1.0 mm optics. The tubes are mounted flush on the object side (tissue, high NA) for the side viewing version the prism is not protected by the tube.. On the image side, the optics sticks out of the tube by 50 – 500 μm. Please add -ST to the product code if desired.
- The lengths can have a tolerance of +/- 5 %.
- The lenses are non-coated. For customized projects, the lenses can be AR-coated.
- A side-viewing scope using microprisms may be also possible on a customized basis (see left).
- Please ask for combination with imaging fiber bundles (Fujikura) as customized solution.
- For tolerances, handling and storage see page 22

not available for following applications : Please note our partnership with Inscopix as our exclusive distributor for the field of non-confocal, single photon epi-fluorescence imaging for neuroscience applications in non-humans (see page 9).